

ABSTRACT

Nowdays, the application of robots in the industrial world is still growing rapidly. One of the example is the implementation of a line follower robot as Automated Guided Vehicle (AGV). In practice, the implementation of a line folllower robot as AGV still need some development. Such as robot movements which still less stable during following the path, and the process of purpose localization robot. In addition, the application of differential wheel mechanics at AGV is still not efficient. Based on these issues, this study aims to implement a car type drive mechanics at AGV and using fuzzy logic to control the stability of the motion of the AGV. In addition, this study also aims to implement the accelerometer and gyroscope sensor to read the movement of the robot motion.

This research was conducted by applying a system of car types drives on the mechanics system and fuzzy logic method to the robot controller. First, the system will read the input from the readings of photodiode sensors, then this readings will become input to the fuzzy controller. Output of fuzzy controller is in the form of value of pwm of dc motors and stepper motors angle will move the robot to follow the path. During the movement of followwing this path, accelerometer and gyroscope sensor will read the robot's acceleration which will be converted to movement of the robot by the microcontroller.

The research resulted in the conclusion that the car type drive which used is good enough with the average error in the left wheel steering system is 0.91° and right wheels is 0.84° . As for forward movement drive systems, robot has an error of 0.116 m. Fuzzy logic which is used by the robot have 1.28 cm average error. However, for the application of accelerometer and gyroscope sensor as the reader of distance of robot movement is not ideal with increasing error value for reading acceleration.

Keywords : line follower, car type drive, fuzzy logic, accelerometer, gyroscope